NotesTracker User Guide

The comprehensive toolkit for
tracking usage and compliance
and enhancing the functionality of your
IBM Notes and Domino Applications

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ABOUT THIS GUIDE

This guide is for Users of Lotus Notes / Domino applications in which NotesTracker has been implemented. It provides detailed information on viewing NotesTracker logs, analyzing data, and creating reports.

The first step to implementing NotesTracker is for your Lotus Notes / Domino developers to add the necessary NotesTracker design elements to your applications. The steps to perform this are covered in the NotesTracker Developer Guide.

After the required design elements have been added to your applications the NotesTracker repository database(s) need to be created, configuration settings, and alerting need to be setup. This information is covered in the NotesTracker Administrator Guide.

The rest of this guide assumes NotesTracker has already been implemented & configured and shows you how to use and get the most out of your NotesTracker enabled applications.

DISCLAIMER

This guide could include technical inaccuracies or typographical errors. Please advise us if you see the need for any corrections. We welcome your feedback about any technical inaccuracies plus your comments about this guide's clarity, usability and missing or incomplete information.

Changes are periodically made to the information herein. These changes will be incorporated in new editions of the publication. For all but trivial changes (such as minor errors in spelling, punctuation and layout) the modified publishing date will be displayed on the front cover.

AGECOM may make improvements and/or changes in the software and its features described in this guide at any time without notice. You should periodically check our website and weblogs for notification of such changes.

WHAT IS NOTESTRACKER?

NotesTracker is a comprehensive ***application enabling*** developer toolkit. The application makes it easy and simple for you to extend your IBM Lotus Notes and Domino database applications so that you can rapidly detect and report on a wide range of actions being carried out on the content of the databases.

NotesTracker was originally developed by Asia/Pacific Computer Services and is now proudly provided and supported by AGE Computer Consultancy (herein referred to as AGECOM) (http://www.agecom.com.au).

NotesTracker monitors the creation, reading, updating, and deletion of documents in Lotus Notes databases.

Furthermore you can track not only that a particular Notes document in its entirety was updated (when, where, and by whom) but what parts of a document's content was altered. This is done by selecting the logging of the “before” and “after” values stored in all fields or just user-nominated fields in the document.

You can also track changes to *attachments* stored in documents, by logging the “before” and “after” names and sizes of attachments. The attachments themselves are not logged, since this could enormously increase the Repository database's disk space requirements, with attachments typically being megabytes in size. NotesTracker has been designed and coded carefully to run as efficiently as possible in order not to add a significant performance burden to your Notes/Domino environment.

NotesTracker can log other content manipulation actions too, such as the *pasting* of documents into a database or the *mailing-in* of messages arriving from the Internet.

NotesTracker goes beyond just the *passive* logging of actions occurring against database contents. In terms of being *proactive*, NotesTracker empowers your developers to extend your applications by tracking additional types of actions (such as button presses), to generate mail alerts when document content is acted upon in ways that are important to you, and a way for you to build dynamic Notes views for continuous monitoring of content- related events in the RSS fashion that is so popular on the Internet.

EXAMPLE USES OF NOTESTRACKER

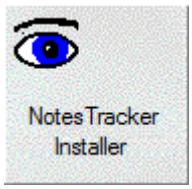
Here's a small selection of the ways that you might benefit from using NotesTracker.

- ✓ **Generate comprehensive document history trails** (sometimes referred to as "breadcrumbs") – See who Creates, Reads, Updates, and Deletes individual Notes documents, as well as document pastes and mail-ins. This is great for troubleshooting, and for finding “the guilty ones” who entered bad data or deleted key documents!
- ✓ **Analyze all the active users** of your Notes databases, arranged to show the **significant users (that is,** "the makers" -- those who contribute most to your applications by adding/updating content – versus "the takers" who consume content but don't develop and maintain it. This can be used to reward your key knowledge contributors, or to nudge less active users.
- ✓ **Field audit trails** – Determine who made what **changes to individual field values** in each document. This could generate a payback by enabling you to gain understanding and content control for as little as a single critical database of yours. (Indeed, one user justified purchase of a NotesTracker license by gaining control over just their Domino Directory database.)
- ✓ Discover what sort of **document content** is most **popular,** or **"hottest"** (you will see the percentage usage of each document in a database). Use this to determine if an application is being used as you intended, whether it needs design improvement or enhancement, and so on.
- ✓ Determine which documents have **low usage rates**, and thus are good candidates to **be archived** or **purged**.
- ✓ **Mail Tracking** – NotesTracker can be applied to any sort of database, but one popular application is the tracking of activities occurring in users' Notes Mail databases – typically for compliance, data secrecy or privacy reasons (e.g. when a user's mail is delegated to any other person). Read about the importance of doing this in US Government Agencies Face Challenges in Managing E-Mail (GAO report, April 2008)
- ✓ **When and where did it happen?** Examine the date, time and server for each "hit" if needed, once a database's design has been enhanced by adding NotesTracker code. Identify **usage patterns and trends** – over a period of hours, days, weeks, months or years, and in easily-understood categorized Notes views – equally valid for Web- based Domino applications or Notes Client accesses.
- ✓ **Determine detailed user navigation patterns –** How and when each user shifts from document to document, and database to database. Are they using your Notes applications as designed or expected? Does documentation need to be improved or additional application training need to be carried out?
- ✓ Application performance effects? Are specific document actions (such as updates) contributing most to **Domino server loading?** This could give you pointers, otherwise unobtainable, about how you might redesign or reconfigure your Notes applications to lessen server load and improve responsiveness.
- ✓ **Breaking News** – design a Notes view filtered view to display the very newest documents in the order they are created or updated. This is just like generating your very own **RSS-style newsfeeds.**
- ✓ Track **"special" documents** – certain documents in a database that you designate as being particularly interesting and/or important for some reason. These could be any documents. For example, in a Domino Directory database there will probably be Server Documents for a select few of your servers, such as mail hubs, that you want to focus on and be automatically alerted if key fields relating to network performance or security are altered.
- ✓ **Activity Alerts** – get notified via e-mail as soon as documents are updated, deleted, and so on (even when certain fields that you select are updated), or as soon as a document that you nominate as "special" is used. It could be just about anything, such as a sale being won or lost, a credit limit being exceeded, a document is deleted, a special menu or seating request in a travel request application.
- ✓ Track **"generic" events** – this is a NotesTracker term referring to events like button clicks and otherwise untrackable application actions that are of interest. With minimal database design change, you can track a range of application-related actions that might otherwise require lots of coding and testing.
- ✓ Why track everybody? If you so need or desire, you can **track only specific users** of a particular database (or ignore them and track everybody else). For example, you may wish to focus your tracking on the actions of certain key users of a database, or perhaps even just a single user suspected of defalcation or data theft or privacy violations, or only those people encountering problems in using an application, or whatever the case might be.

THE PACKAGING OF NOTESTRACKER – EVALUATION AND LICENSED VERSIONS

NotesTracker comes in the form of a **Repository database** – referred to as the "NotesTracker Repository" or the "NotesTracker log" – which delivers several capabilities:

- It can be used to hold an **audit trail, or log, of the application activity** for your Notes databases. A collection of *usage log entries* builds up over time as the databases' documents are being created, accessed and deleted and when other trackable events occur (such as database or view opens, document pastes and mail-ins, plus others that you can define).



- The NotesTracker Repository database provides, via Notes views, a continuously-updated **analysis of document and view usage patterns** in your own application databases.

  You may have one or more NotesTracker repositories located throughout your Notes/Domino network, and they will behave and replicate just like any other ordinary Notes database. This is important, because it means that no special repository or reporting infrastructure needs to be learned about, installed and maintained – that is, with NotesTracker it's a simple case of "business as usual."

  This guide explains how you would decide about and set up a single repository or multiple NotesTracker repositories, each repository used for logging the activities occurring in just a single database (if it's an important one) or in groups of related databases.

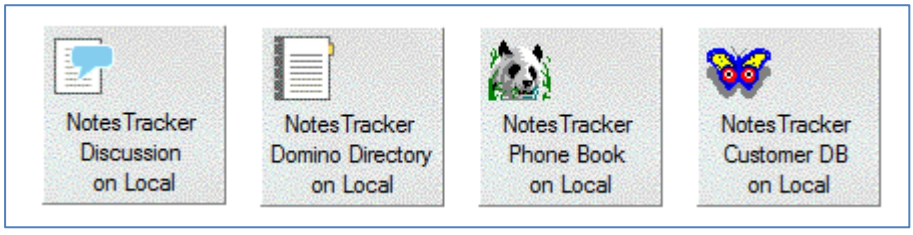
  The NotesTracker Developer Guide discusses the advantages (and disadvantages) of a further option: modifying the design of a given database so that NotesTracker's usage logging entries are stored within the database itself, rather than getting sent to a central NotesTracker repository.

- The distributed NotesTracker repository database also doubles up as the *code container* for the NotesTracker Software Development Kit (SDK), that is, as the **NotesTracker design repository.**

  As a **licensed user** (purchaser) of NotesTracker you will get a version of the NotesTracker Installer that provides access to all NotesTracker source code (LotusScript and Formula Language) and all other design elements (forms, views, agents, etc). This enables your Notes developers and administrators to easily adapt your Notes databases for comprehensive usage tracking, by building the NotesTracker code into the database designs.

If you are using the free **evaluation** version, all of the functions work without limitations and can be fully exercised, but you do not get access to the underlying NotesTracker source code and design elements. In Lotus Notes terminology, the evaluation databases have "hidden" designs.

Also distributed with the Repository are several representative Lotus Notes databases to give you as a potential user some representative NotesTracker-ready applications for familiarization and experimentation with NotesTracker configuration, usage and reporting:



The example databases in the NotesTracker evaluation version are fully functional (but their designs are hidden). Our expectation is that after a little experience using them you will quickly come to see the potential for NotesTracker in your organization and be able to make informed purchase decisions.

The example databases in the NotesTracker purchased (licensed) version do not have their designs hidden. As a licensed user, your Notes/Domino developers should examine the various NotesTracker techniques in these databases as a kick-off point to quickly discover how NotesTracker can be put to use.

This guide together with tips on the NotesTracker News Blog will quickly show your Notes developers and administrators how to adapt your own Lotus Notes applications and take full advantage of NotesTracker's capabilities.

ABOUT NOTESTRACKER

DERIVATION OF THE NAME “NOTESTRACKER”

Items such as documents and views in Lotus Notes databases are sometimes referred to as “design notes” or just “notes”, hence the name “NotesTracker” because it is the user actions being performed against these items that are being tracked. NotesTracker’s emphasis is on *application content and activity against it* (rather than on what some other tools track, such as Domino server performance and disk usage, or networking traffic loads).

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Our aim: to provide you with a reliable, resilient, capable and low-risk solution backed by professional support, while retaining our precious intellectual property rights invested in NotesTracker and receiving an adequate return in order to be here to support you in the long run!

As a convenience, on the following pages is a snapshot of the NotesTracker terms and conditions of use that applied at the time that this guide was last updated.

Please note that the terms are varied from time to time and you should always obtain latest version of the terms and conditions from the AGECOM website (since it is these which apply to your use of NotesTracker): http://www.agecom.com.au/NotesTracker

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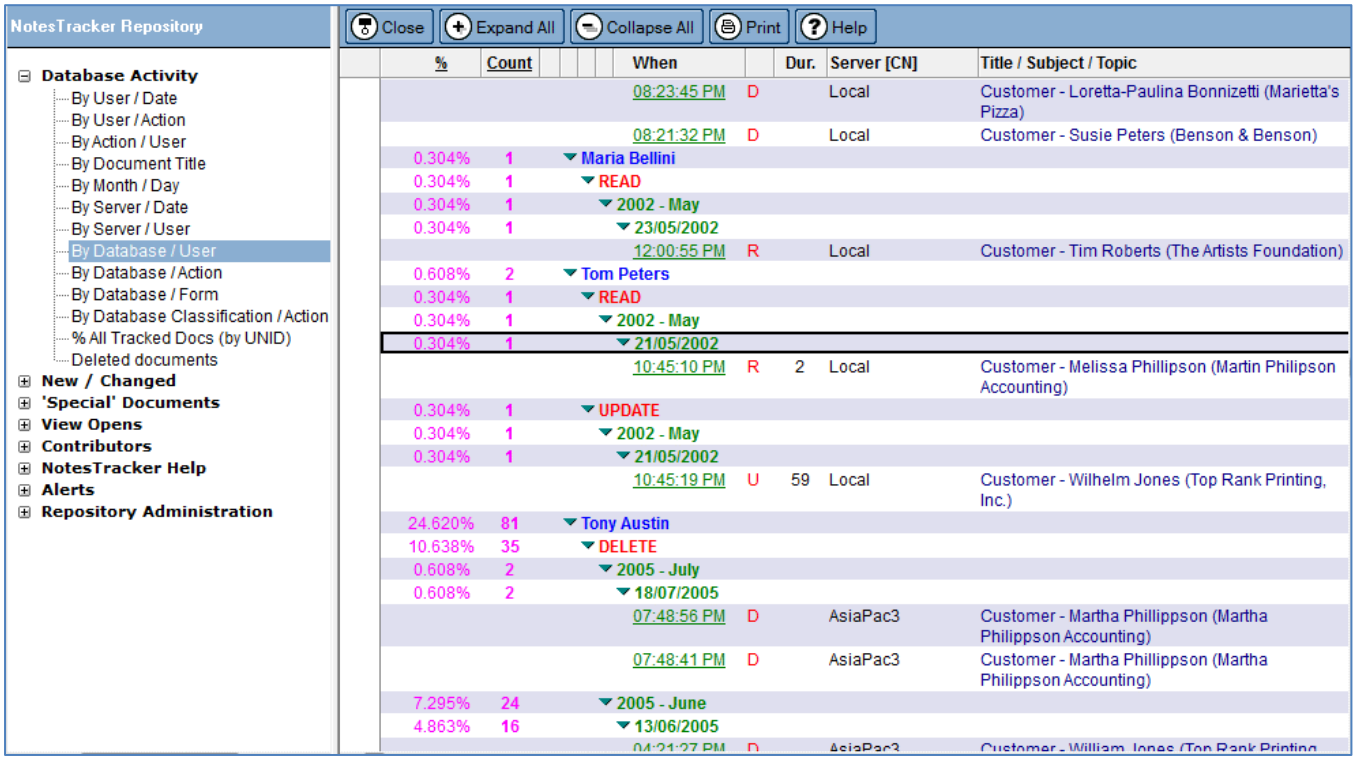
HOW YOU VIEW AND ANALYZE USAGE METRICS GENERATED BY NOTESTRACKER

As soon as Usage Log documents are written to the NotesTracker Repository database, you can examine them via Notes views provided in the repository. This is a simple yet powerful way to examine and analyze the document (and view) usage patterns and trends in your applications.

The various views distributed with NotesTracker were devised to present the database usage in a number of useful and interesting ways. For example, here is what the "**By Database / User**" view would look like:


NotesTracker Repository
Database Activity
By User / Date
By User / Action
By Action / User
By Document Title
By Month / Day
By Server / Date
By Server / User
By Database / User
By Database / Action
By Database / Form
By Database Classification / Action
% All Tracked Docs (by UNID)
Deleted documents
New / Changed
'Special' Documents
View Opens
Contributors
NotesTracker Help
Alerts
Repository Administration
Close
Expand All
Collapse All
Print
Help
% Count When Dur. Server [CN] Title / Subject / Topic
08:23:45 PM D Local Customer - Loretta-Paulina Bonnizetti (Marietta's Pizza)
08:21:32 PM D Local Customer - Susie Peters (Benson & Benson)
0.304% 1 Maria Bellini
0.304% 1 READ
0.304% 1 2002 - May
0.304% 1 23/05/2002
12:00:55 PM R Local Customer - Tim Roberts (The Artists Foundation)
0.608% 2 Tom Peters
0.304% 1 READ
0.304% 1 2002 - May
0.304% 1 21/05/2002
10:45:10 PM R 2 Local Customer - Melissa Phillipson (Martin Philipson Accounting)
0.304% 1 UPDATE
0.304% 1 2002 - May
0.304% 1 21/05/2002
10:45:19 PM U 59 Local Customer - Wilhelm Jones (Top Rank Printing, Inc.)
24.620% 81 Tony Austin
10.638% 35 DELETE
0.608% 2 2005 - July
0.608% 2 18/07/2005
07:48:56 PM D AsiaPac3 Customer - Martha Phillippson (Martha Philippson Accounting)
07:48:41 PM D AsiaPac3 Customer - Martha Phillippson (Martha Philippson Accounting)
7.295% 24 2005 - June
4.863% 16 13/06/2005

If the supplied views are not sufficient for your analytic or forensic purposes, it will be an easy task for your Notes developers (or even "power users") to build additional views or adapt the provided views so as to meet your needs.

Alternatively, you could use third-party reporting or charting software to provide more extensive usage analyses. There is a brief discussion of this possibility at the very end of the guide, under the heading "*Extended Analysis and Reporting*".

DISPLAYING THE USAGE LOG DOCUMENT

The NotesTracker Usage Log document has the following three sections in it:

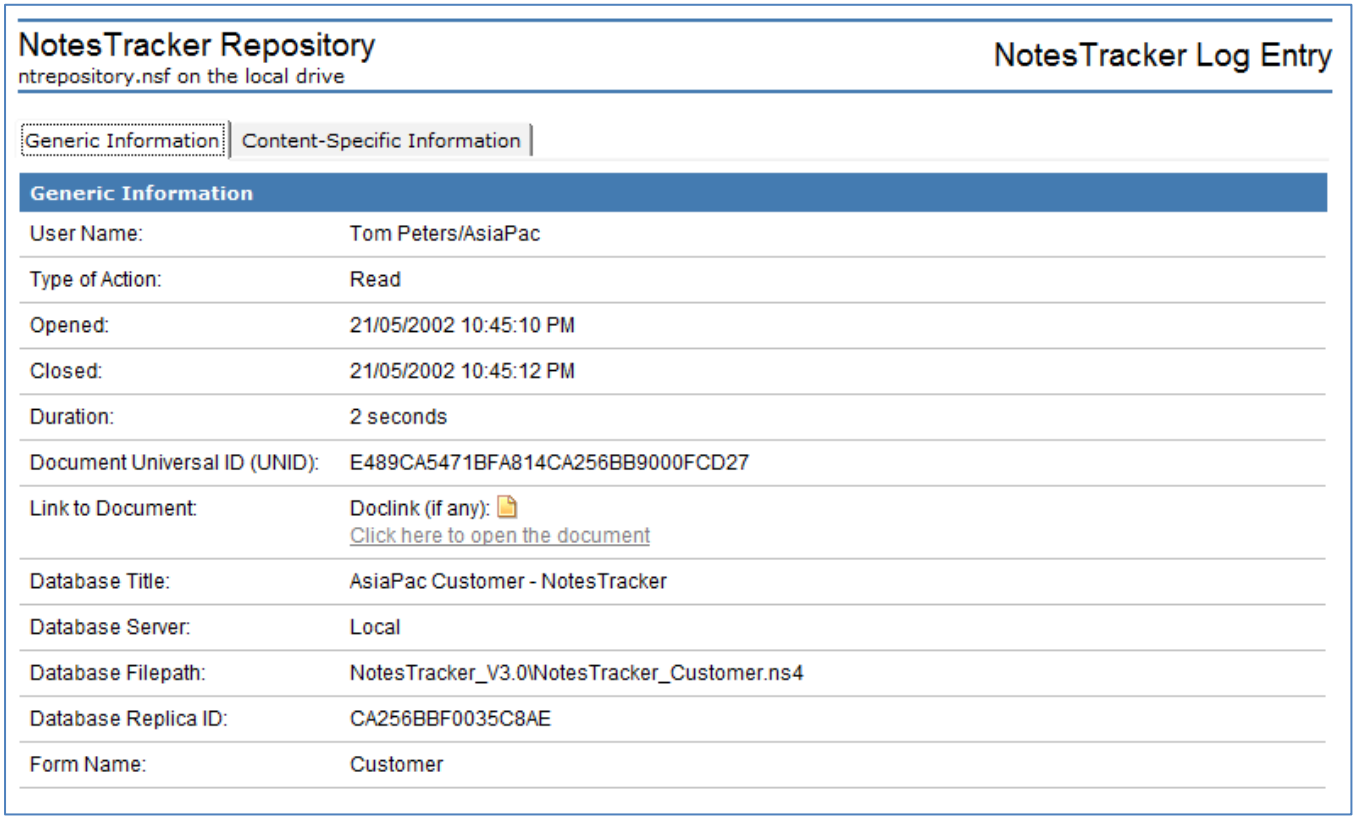
Generic Information
General information for the type of event that has been recorded, when it occurred, the name of the user who performed the action, which document (and a link to the document depending on the type of event), and which database

Content-Specific Information
Shows the document title, special document content (if applicable), and email alerting information (if email alerting has been enabled).

Field Contents – Audit Trail
If the log is for changes made to a document this section will show the monitored fields that have been changed, their before and after values, changes made to any attachments, and the logging settings that were in effect at the time the event was logged.

Each of the three sections for a typical log document are shown below.

Generic Information


NotesTracker Repository
ntrepository.nsf on the local drive

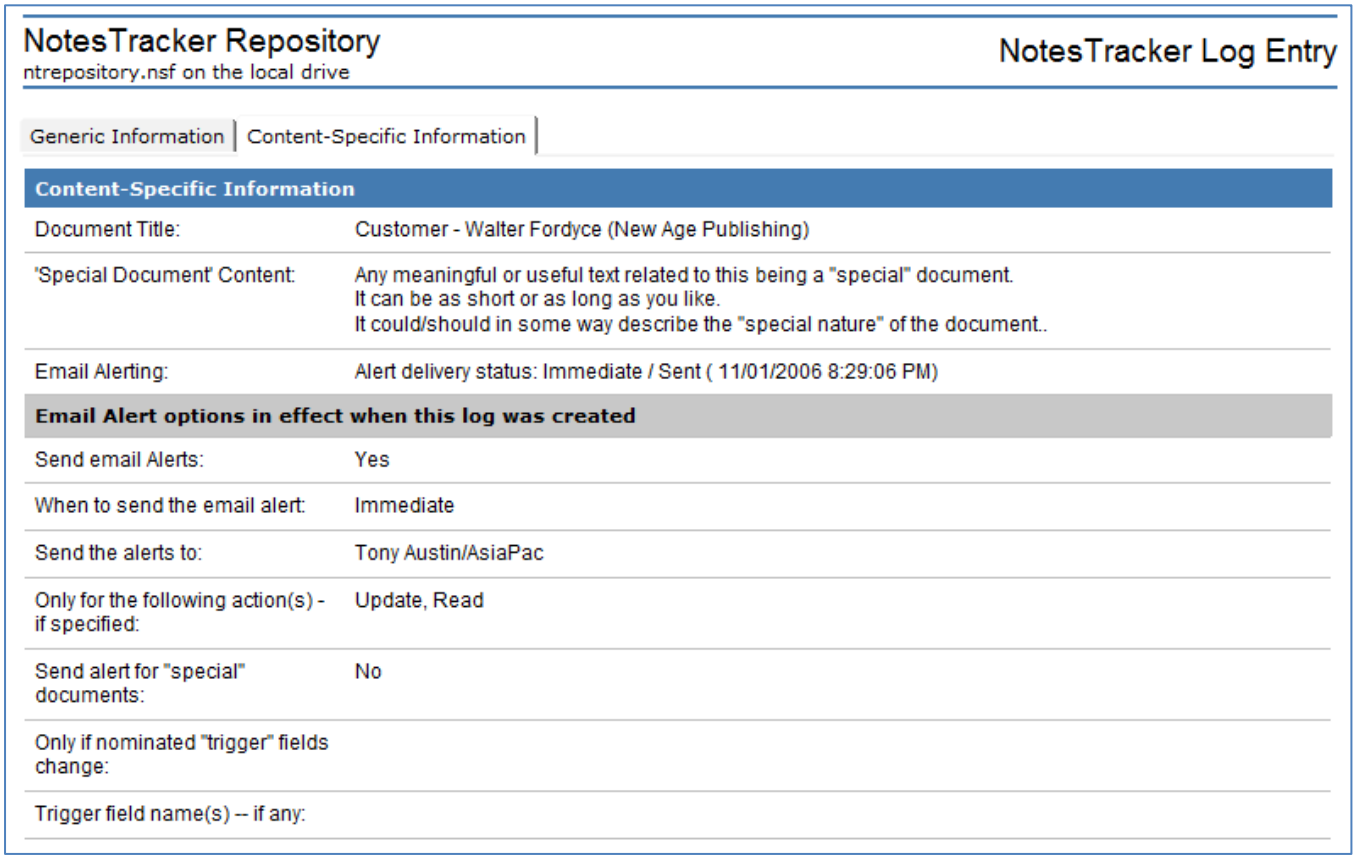
NotesTracker Log Entry

Generic Information | Content-Specific Information

Generic Information

User Name:	Tom Peters/AsiaPac
Type of Action:	Read
Opened:	21/05/2002 10:45:10 PM
Closed:	21/05/2002 10:45:12 PM
Duration:	2 seconds
Document Universal ID (UNID):	E489CA5471BFA814CA256BB9000FCD27
Link to Document:	Doclink (if any): Click here to open the document
Database Title:	AsiaPac Customer - NotesTracker
Database Server:	Local
Database Filepath:	NotesTracker_V3.0\NotesTracker_Customer.ns4
Database Replica ID:	CA256BBF0035C8AE
Form Name:	Customer

Content-Specific Information



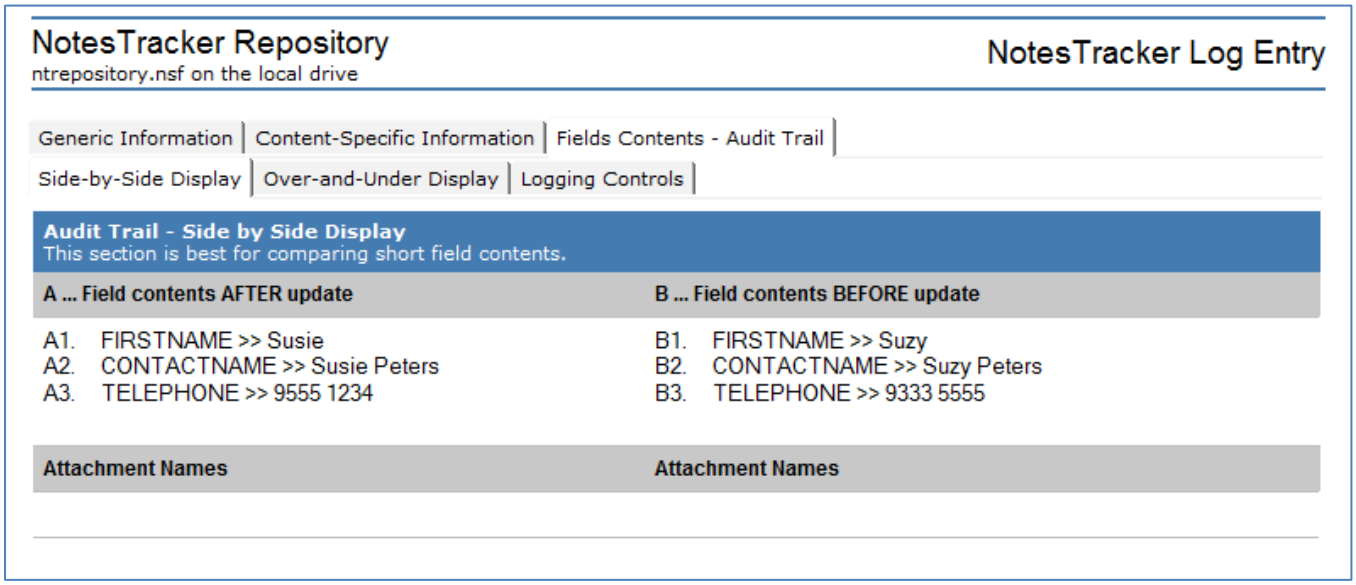
NotesTracker Repository
ntrepository.nsf on the local drive

NotesTracker Log Entry

Generic Information | Content-Specific Information

Content-Specific Information	
Document Title:	Customer - Walter Fordyce (New Age Publishing)
'Special Document' Content:	Any meaningful or useful text related to this being a "special" document. It can be as short or as long as you like. It could/should in some way describe the "special nature" of the document..
Email Alerting:	Alert delivery status: Immediate / Sent (11/01/2006 8:29:06 PM)
Email Alert options in effect when this log was created	
Send email Alerts:	Yes
When to send the email alert:	Immediate
Send the alerts to:	Tony Austin/AsiaPac
Only for the following action(s) - if specified:	Update, Read
Send alert for "special" documents:	No
Only if nominated "trigger" fields change:	
Trigger field name(s) -- if any:	

Fields Contents – Audit Trail



NotesTracker Repository
ntrepository.nsf on the local drive

NotesTracker Log Entry

Generic Information | Content-Specific Information | Fields Contents - Audit Trail | Side-by-Side Display | Over-and-Under Display | Logging Controls

Audit Trail - Side by Side Display
This section is best for comparing short field contents.

A ... Field contents AFTER update	B ... Field contents BEFORE update
A1. FIRSTNAME >> Susie	B1. FIRSTNAME >> Suzy
A2. CONTACTNAME >> Susie Peters	B2. CONTACTNAME >> Suzy Peters
A3. TELEPHONE >> 9555 1234	B3. TELEPHONE >> 9333 5555
Attachment Names	**Attachment Names**

NOTESTRACKER USAGE "REPORTS"

There are numerous views supplied in the NotesTracker Repository database that present the usage statistics in meaningful ways. They a conventional or “plain vanilla” Notes views, so it will be a simple matter for your Notes developer – or even a "power user" -- to add further views that present information in other meaningful ways (or to remove unwanted views to reduce Domino server overhead).

Executive sponsors, content managers, knowledge managers, database administrators, auditors and others will find the NotesTracker log information invaluable for many reasons, such as:

- To determine the **most popular documents** (or the least popular ones)
- To discover the **rarely-used documents** that are good candidates for being purged
- To analyze the **time-dependency of documents** (e.g., whether a "hot" document is accessed soon after it is created)
- To discover who are the **regular users** of the databases (and, by implication, the occasional users) To recognize the **contributors** (document creators and editors)
- **To understand who deleted which documents, and when they did it –** sometimes a contentious issue!
- **To understand the pattern of View Opens –** because excessive opening of views can cause a severe drain on Domino server resources, usage metrics on view opens can provide an extremely useful insight into which views in which databases are contributing to sever load.

  Views in databases holding many documents can also consume significant amounts of disk space. The view open metrics provided by NotesTracker offer you a definitive way to **determine which views are used infrequently and thus are good candidates for deletion from a database's design**.
- To set up a **"Breaking News" view** that is suitable for incorporating in a pane on your corporate or departmental Portal Page or Welcome Page (discussed in the NotesTracker Developer Guide).
- **To easily understand who changed the contents of which document fields.** This can be extremely useful in all sorts of ways, a few examples being:
  - a Domino Administrator knowing who changed a critical security or replication field in a Server Document
  - a manager finding out who updated vital information about an employee or a customer
  - an auditor quickly determining where, when and by whom changes were made to certain monetary fields
  - a lawyer better understanding where (and when) changes were made to parts of a legal document
  - a sales manager knowing exactly what quota changes were effected for his sales representatives

It is worth stressing that the usage tracking function (and sub-functions) can be turned on or off at any time, on an individual database-by-database basis. People with the appropriate authority do this simply by editing the NotesTracker Configuration Document in a given database. This is described fully in the ‘*NotesTracker Configuration*’ topic in the Administrator guide.

CONTEXT-SENSITIVE HELP AVAILABLE

Throughout most pages and views in the NotesTracker Repository database context-sensitive help information is available. To view the help information for the current page simply click the help button at the top of the form or view:

After clicking the help button a dialog will popup on the screen showing the appropriate information:

Close Print

NotesTracker Log Entry - Help

The NotesTracker Log Entry form shows the information that was recorded for a monitored event. Please note: the information shown in the log will vary according to the type of action performed.

Generic Information | Content-Specific Information

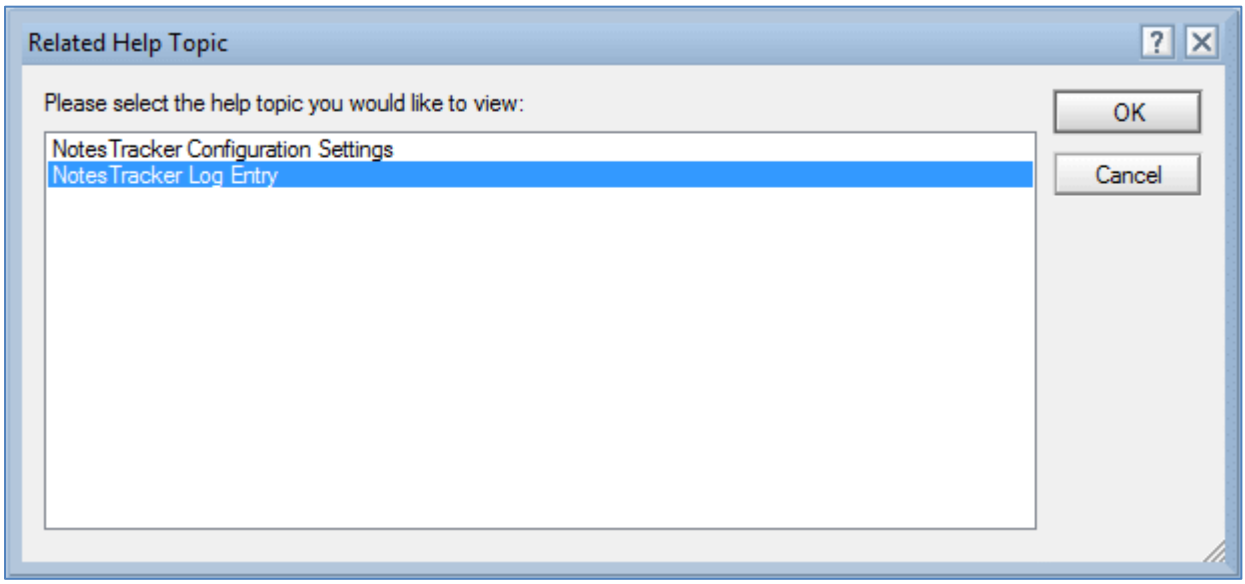
Generic Information This section show general information that was logged for the event.	
User Name	The name of the user who performed the action.
Type of Action	The type of action performed.
Action Date / Time	The date / time the user performed the logged action. The label for this field will automatically change according to the type of action logged.
Closed	The date / time the user closed the logged element.
Duration	The length of time the user took to perform the action.
Document Universal ID	The universal id (unique identifier) of the document that an action was performed against.
Link to Document	A link to the document that an action was performed against. The document may be opened if the following option(s) are available: • Clicking the provided document link. • Clicking on the 'Click here to open the document' link. Note: the above options may or may not be available depending on the type of action logged. If the linked document has since been deleted an error may be displayed when clicking the document link.
Database Title	The title of the database the logged action was performed in
Database Server	The server where the database was located on.
Database FilePath	The path / filename of the database.
Database Replica ID	The replica id of the database.
Form Name	The name of the form the document was created with.
CGI Variables	Any CGI variables that were record when the action from a web browser was performed.

Some help topics contain links to other related help topics. You will see these at the bottom of the help dialog as in the following example:

Related Help Topics:

NotesTracker Configuration Settings
NotesTracker Log Entry

Clicking on any of the related help topics will display the following dialog box:



Simply click on the related help topic you would like to view then click the Ok button.

To print the help topic click the ‘Print’ option in the upper right-hand corner of the help dialog window.

To close the help dialog either press the Esc key on the keyboard or click the ‘Close’ option in the upper right-hand corner of the help dialog window.

EXTENDED USAGE ANALYSIS AND REPORTING

TAILORING OF VIEWS, AND INTERFACING WITH EXTERNAL ANALYSIS TOOLS

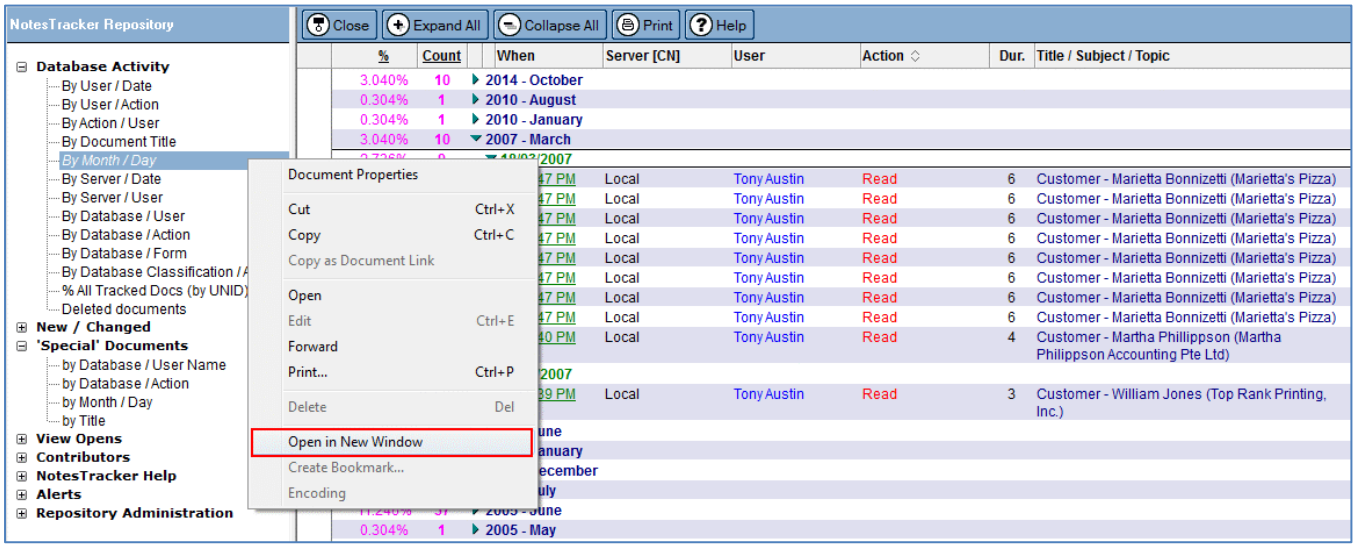
In the NotesTracker Repository database, a set of views have been put together in the expectation that they will meet at least your initial requirements for usage analysis (by user, by date, by action type, by server, by database, special documents, contributors, breaking news, and so on).

After a while, you will probably want to add more views or modify the existing ones to better meet your usage metrics needs.

For example, the duration in seconds for which a document is open is recorded, but is not used as a main category in any of the supplied views. (the duration, if exceeding one second, is a non- categorized, non-sorted column only. The "one second" durations are assumed to be trivial operations and are blanked out in the column so as to make the column appear less cluttered.). You could use this value to explore how long your users keep documents open, and so develop a new view that categorizes the documents by duration (perhaps using categories like as "Less than 10 seconds", "11 to 30 seconds", "31 to 60 seconds", "between 1 and 5 minutes", "between 5 and 10 minutes" and "Over 10 minutes").

TIP- OPENING NOTESTRACKER USAGE VIEWS IN A NEW WINDOW

Rather than switching back and forth between tabs, it can be very convenient if you are continuously monitoring database activities to right-click on a NotesTracker usage view and from the context menu select "**Open in New Window**" so causing the selected view – such as "**by Month/Day**" in the example – to watch activity logging in a detached window:



OVERCOMING THE REPORTING LIMITATIONS OF LOTUS NOTES VIEWS

Useful as they are, there are definite limitations to the nature and extent of analysis that can be performed using Notes views alone. Therefore you might decide to write an agent (probably using LotusScript or Java language) that extracts selected Usage Log data to a file, which then becomes the input to reporting tools that offer more power and flexibility to generate just the sort of document usage reports that you need (tables, graphs, charts, trend analyses, etc).

To extract NotesTracker information, you might find value in the Export Utility for Lotus Notes provided by AGECOM: http://www.agecom.com.au/export.

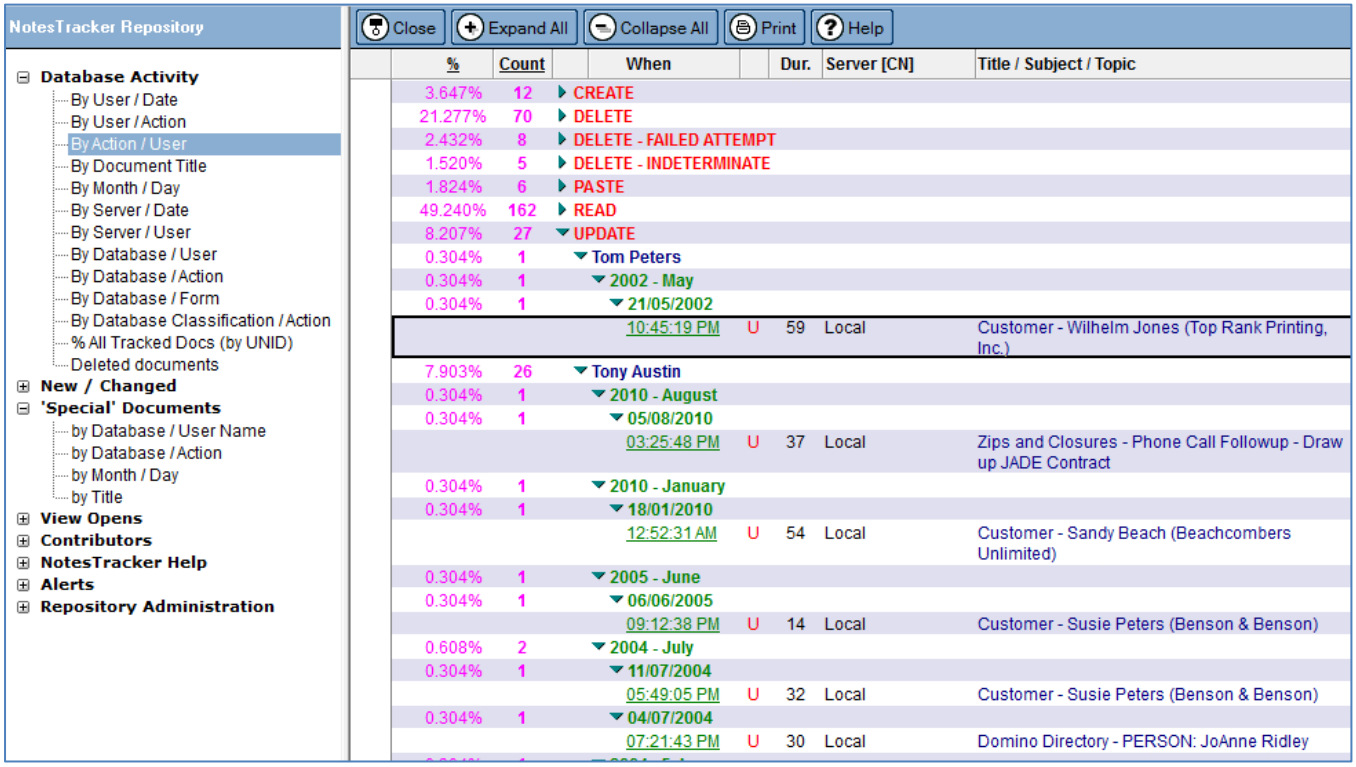
The Export Utility can export Lotus Notes data to the following formats:

- Comma Delimited (CSV)
- Fixed Width
- HTML
- Microsoft Access
- Microsoft Excel
- Microsoft Word
- Tab
- PDF
- XML

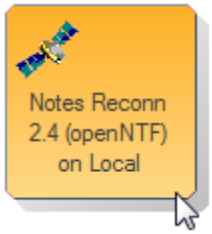
NOTESTRACKER USING LOG CHARTING USING NOTES RECONN FREEWARE FROM OPENNTF.ORG

An excellent and free tool that you should consider for turning NotesTracker views into graphical reports is Notes Reconn from OpenNTF.org

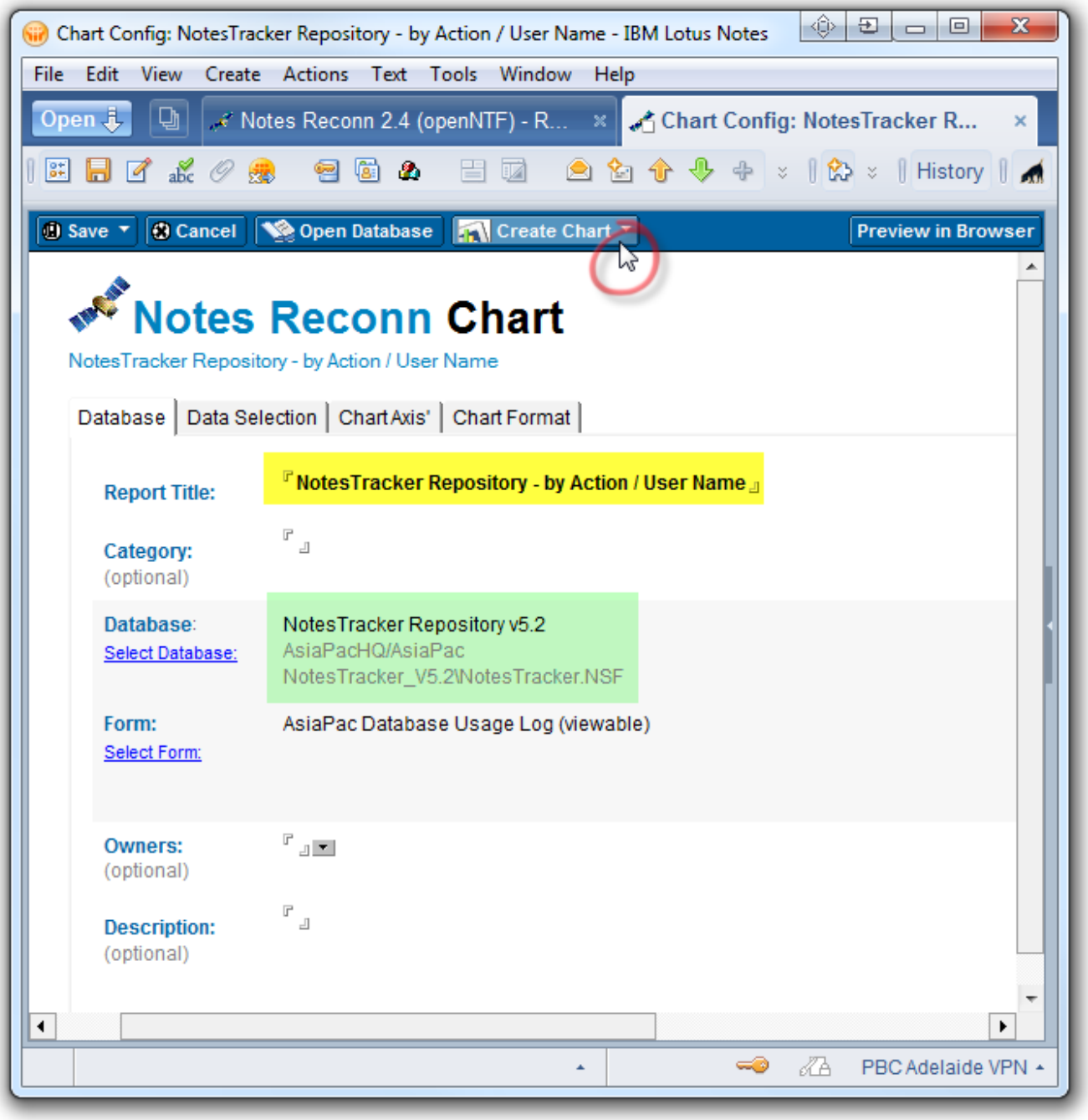
This tool is quite simple to use, and is probably best illustrated by a simple example. Consider the "*Database Activity By Action / User*" view from an example NotesTracker Repository:


NotesTracker Repository
Close
Expand All
Collapse All
Print
Help
Database Activity
By User / Date
By User / Action
By Action / User
By Document Title
By Month / Day
By Server / Date
By Server / User
By Database / User
By Database / Action
By Database / Form
By Database Classification / Action
% All Tracked Docs (by UNID)
Deleted documents
New / Changed
'Special' Documents
by Database / User Name
by Database / Action
by Month / Day
by Title
View Opens
Contributors
NotesTracker Help
Alerts
Repository Administration
% Count When Dur. Server [CN] Title / Subject / Topic
3.647% 12 CREATE
21.277% 70 DELETE
2.432% 8 DELETE - FAILED ATTEMPT
1.520% 5 DELETE - INDETERMINATE
1.824% 6 PASTE
49.240% 162 READ
8.207% 27 UPDATE
0.304% 1 Tom Peters
0.304% 1 2002 - May
0.304% 1 21/05/2002
10:45:19 PM U 59 Local Customer - Wilhelm Jones (Top Rank Printing, Inc.)
7.903% 26 Tony Austin
0.304% 1 2010 - August
0.304% 1 05/08/2010
03:25:48 PM U 37 Local Zips and Closures - Phone Call Followup - Draw up JADE Contract
0.304% 1 2010 - January
0.304% 1 18/01/2010
12:52:31 AM U 54 Local Customer - Sandy Beach (Beachcombers Unlimited)
0.304% 1 2005 - June
0.304% 1 06/06/2005
09:12:38 PM U 14 Local Customer - Susie Peters (Benson & Benson)
0.608% 2 2004 - July
0.304% 1 11/07/2004
05:49:05 PM U 32 Local Customer - Susie Peters (Benson & Benson)
0.304% 1 04/07/2004
07:21:43 PM U 30 Local Domino Directory - PERSON: JoAnne Ridley

Once you've decided on which view you wish to graph, whether it's one of the standard NotesTracker views or one that you've built to meet your specific reporting needs, simply launch Notes Reconn:



Next, select the NotesTracker database and the desired view ((as highlighted in green), type in the chart title (highlighted in yellow), then click on the "**Create Chart**" button:



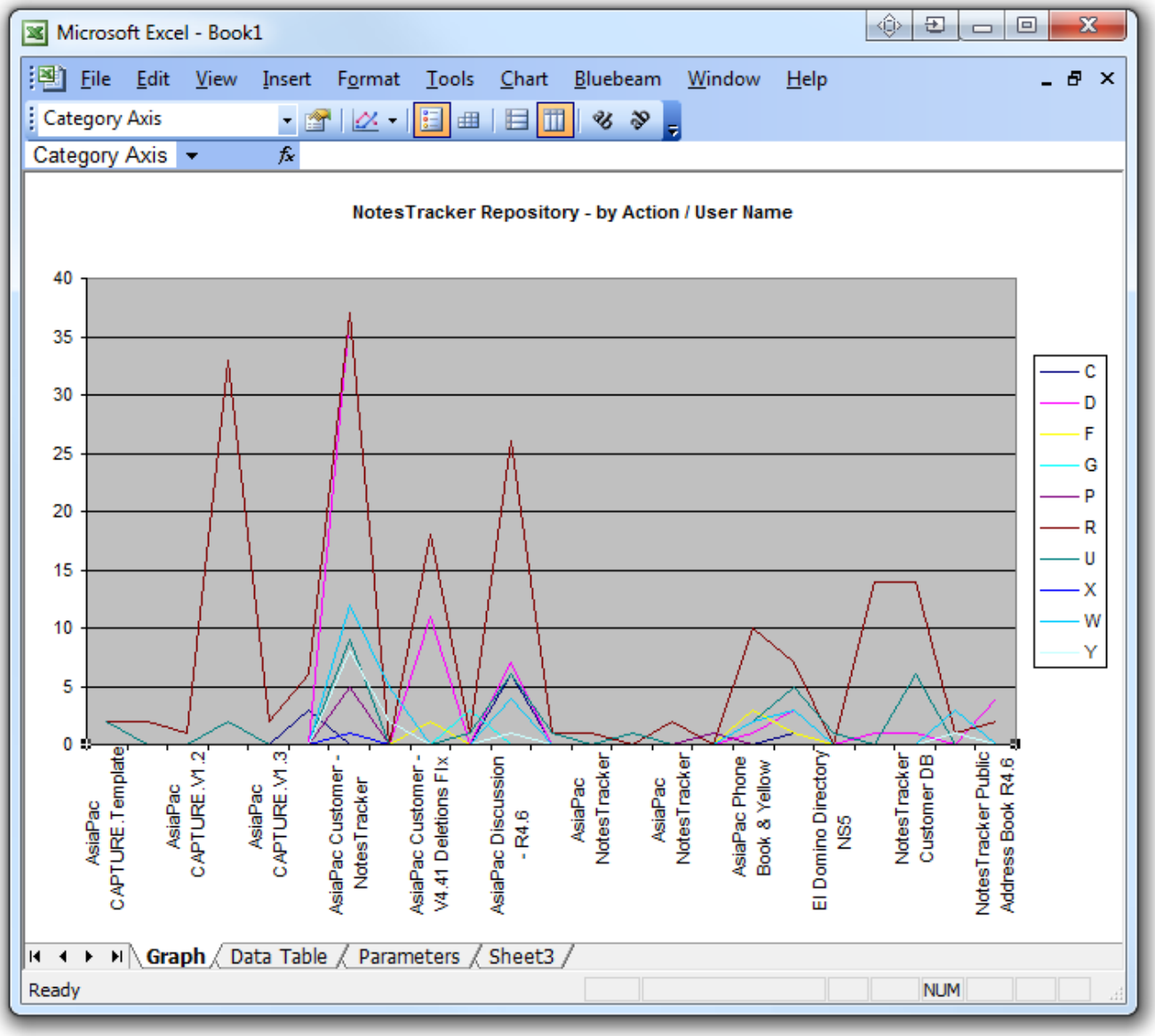
In this example, the "Excel" option was selected on the "Create Chart" button drop-down. Microsoft Excel is launched, and you can select any of the charting formats that meet your needs.

Following are four such charts, and as you can see such charts can give you a much easier-to-understand overview of database activities.

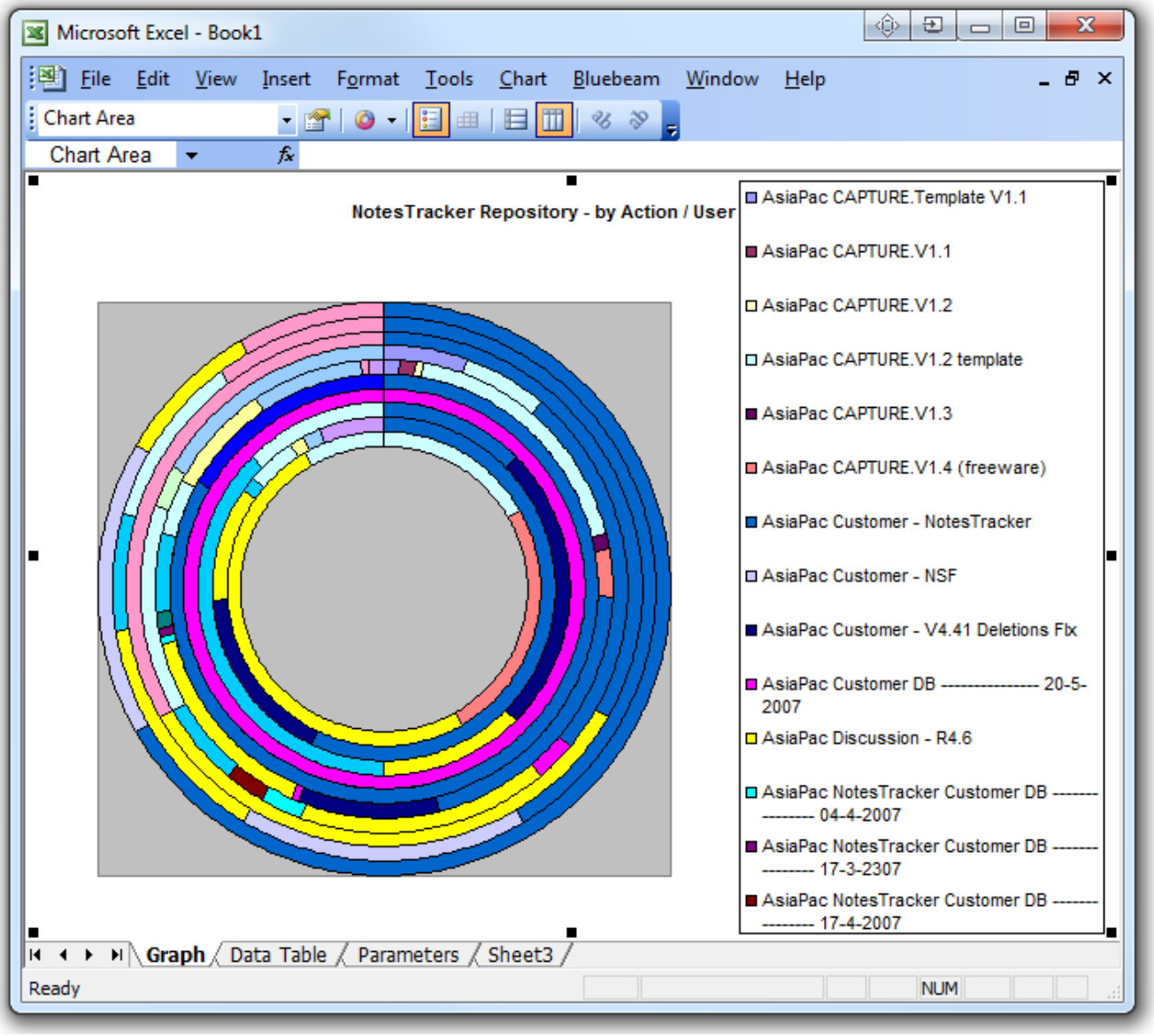
In these Excel charts, the single-character legends on the right correspond with the NotesTracker *action types*:

C = Create
D = Delete
F = Failed Deletion Attempt
G = Generic
P = Paste
R = Read
U = Update
X = Web Create
W = Web Read
Y = Web Update.

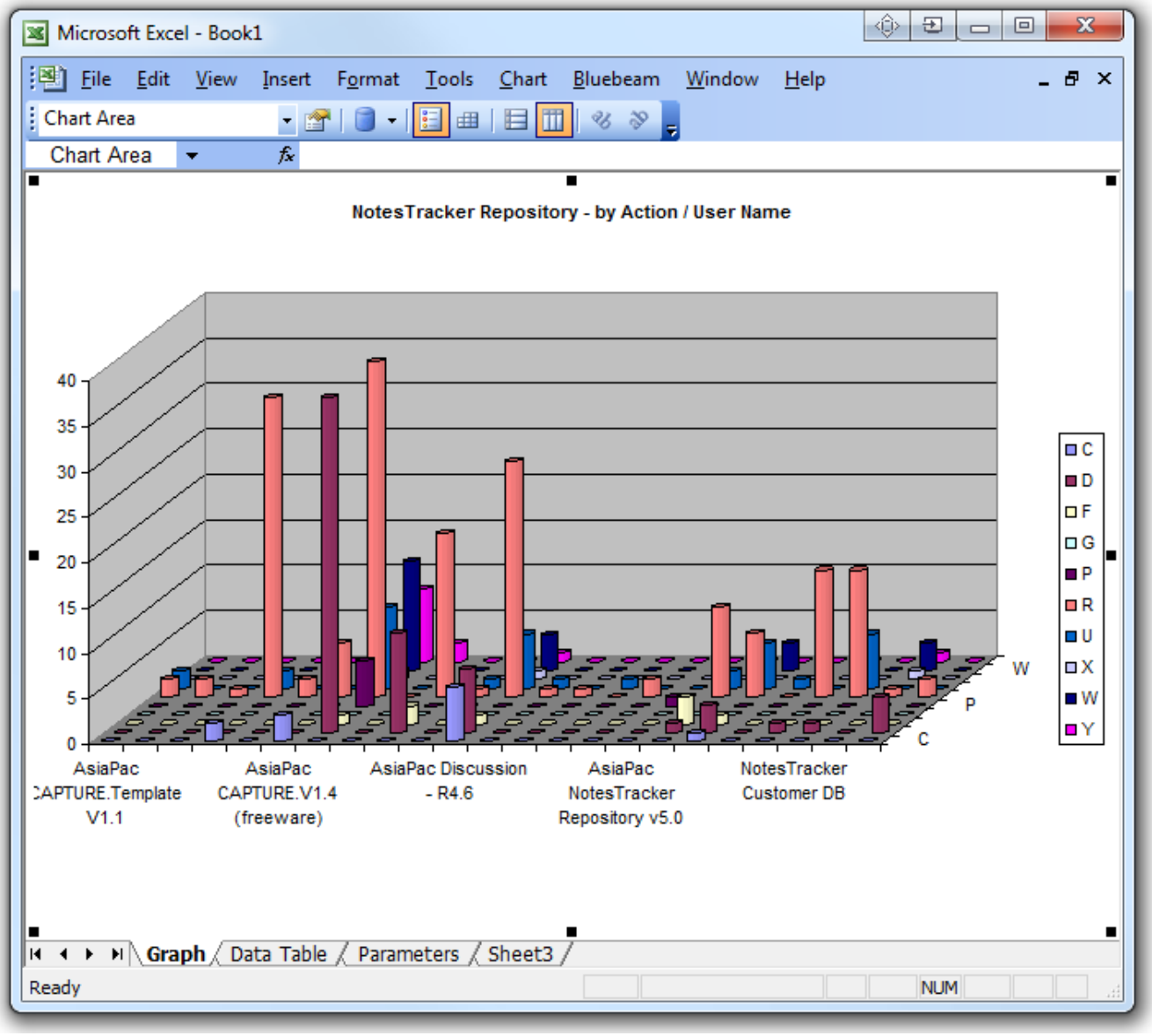
Example Charts generated by Notes Reconn of NotesTracker Repository View: by Action / User Name



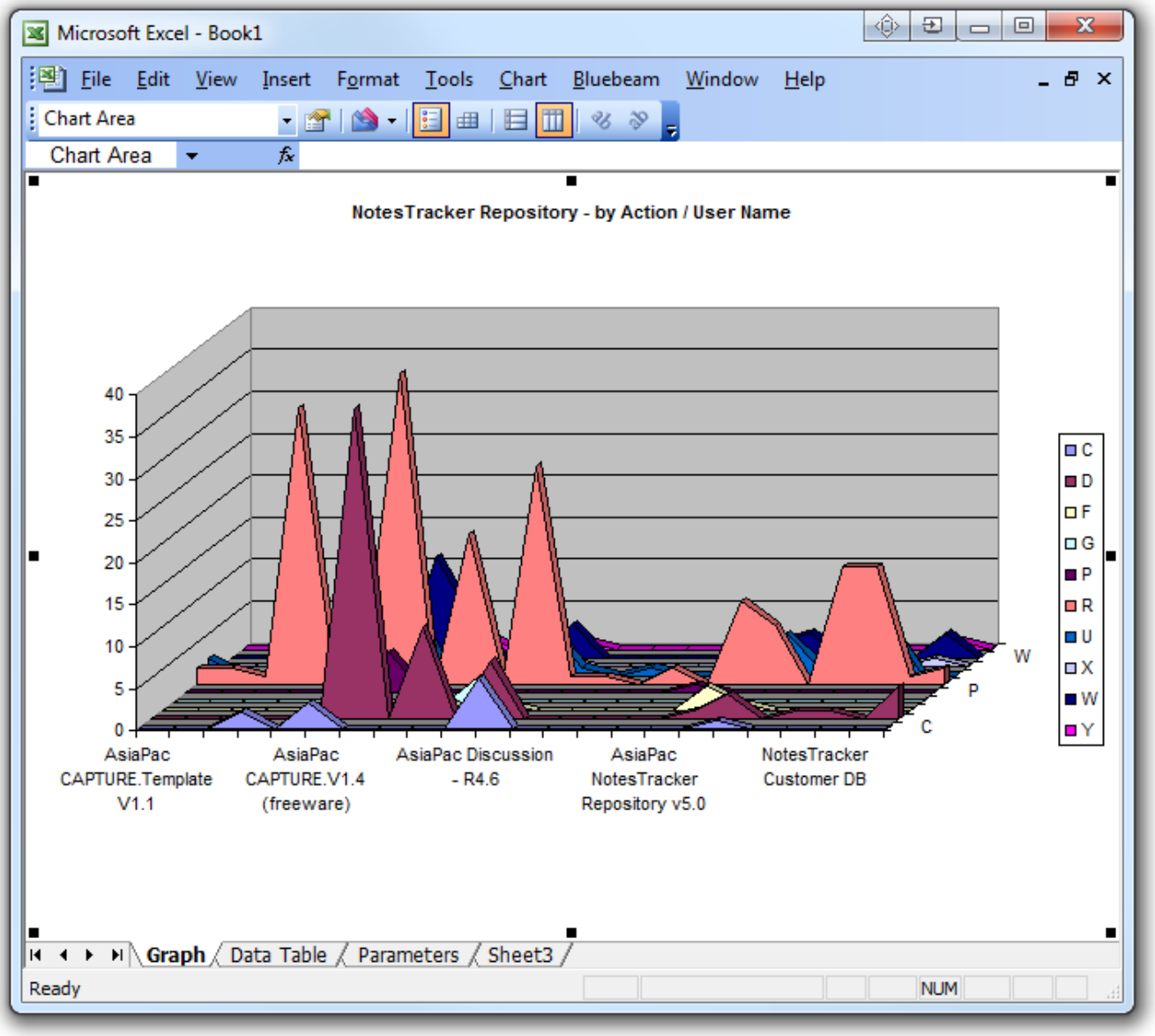
Line Chart



Doughnut Chart



3D Cylinder Chart



3D Area Chart